Symmetry IQ®
4000 SERIES

User Manual • Benutzerhandbuch • Manuel de l'utilisateur • Manuale per l'utente
Manual del Usuario • Manual do Usuário • ユーザーマニュアル _

Hu-Friedy®

Symmetry IQ®
4000 SERIES

TECHNICAL DATA (SPECIFICATION)

Model	Symmetry IQ® 4000 Series
Classification EN 60601-1	Class I device
Classification 93/42 EEC	Class IIa
Mode of Operation	Continuous operation
Power Source	AC120V +/- 10% 50/60Hz AC230V +/-10% 50/60Hz
Power Consumption	42VA
Water Pressure	0.1 - 0.5MPa (15-73 psi)
Ultrasonic Specifications Maximum output: Frequency range:	 8 Watts 28-32kHz
Lighting	Yes
Dimensions in mm (WxDxH)	203mm x 255mm x 85mm (8in x 10in x 3.4in)
Weight	2.5kg (Control Unit) (5.5 lbs)
Length of Handpiece Cord	2.0m Max
Length of Foot Control Cord	2.5m Max
Fuses	120V:T1.25AL/125V,230V:T400mAL/250V
Bottle Volume	350mL/500mL (11.8 oz /16.9 oz)
Degree of p rotection against ingress of water as detailed in the current edition of IEC 60529	Unit: Ordinary Foot Control: IPX1
Operating Conditions	0-40 C (32 - 104 F) 10-85% relative humidity 500-1060hPa atmospheric pressure (7 - 15 psi)
Storage and Transport Conditions	-10-60 C (14 - 140 F) 10-85% relative humidity 500-1060hPa atmospheric pressure (7 - 15 psi)

INTRODUCTION

Thank you for purchasing the Symmetry IQ product. This product is intended to be operated by dental professionals only. This device generates ultrasonic vibrations intended for use in dental applications such as scaling, periodontal therapy, root canal treatment and cavity preparation. Read this operation manual carefully before use and retain for reference. This device does not require special training.

PRODUCT FEATURES AND BENEFITS

- Compact, lightweight device.
- Three color-coded selectable and adjustable pre-defined power modes for a variety of dental procedures.
- Easy to read digital display for trouble-free operation.
- Convenient memory feature to store frequently used operational settings.
- Fiber-optic handpiece to enhance visibility.
- Lightweight, large diameter handpiece encourages a light grasp to reduce operator fatigue.
- Soft, textured silicone finger grip for clinical comfort and control.
- Autoclavable handpiece for infection control.
- Durable, lightweight handpiece cord.
- Two methods of irrigation are available (dental unit/city water and irrigation bottle). The selection of no irrigation is also an option.
- Irrigation tube is isolated within the control unit to prevent solution from coming in contact with the electronics of the unit.
- Two irrigation bottles for use with the IQ 4000 unit.
- Easy to clean design to minimize the risk of cross-contamination.

COMPONENT PARTS

1. Control Unit
2. Symmetry IQ Handpiece
3. Replacement Bulb
4. Water Tube
5. Symmetry IQ Fiber-optic Handpiece Cord
6. Spanner Wrench (5X8) – 2 pieces
7. Foot Control
8. AC Power Cord
9. Irrigation Connector (AC 120V Only)
10. Irrigation Bottles – 2 pieces
11. O-rings for irrigation bottles (not pictured)
12. Tip Wear Guide (not pictured)
13. Power Range Guide (not pictured)
14. Three Symmetry S-Series Tips (not pictured)

SYMBOLS AND GENERAL SAFETY

	Risk of damage or harm
	Attention, consult accompanying documents
CE 0120	CE marking: Refers to directive 93/42 EEC, including IN 60601-1 and EN 60601-1-2
EC REP	Authorized representative in the European community.
	Dispose of this device and its accessories via methods approved for electronic devices and in compliance with the Directive 2002/96/CE
	Equipment or Equipment parts can transmit RF electromagnetic energy.
	TUV Rhineland of North America is a Nationally Recognized Testing Laboratory (NRTL) in the United States and is accredited by the Standards Council of Canada to certify electro-medical products with Canadian National Standards.
IPX1	Protected against vertically falling water drops.

	Type BF applied part
	Sterilizable up to 135°C
	City Water
	Irrigation Bottle
	Foot Control
	Power Plug
	This Way Up
	Handle With Care
	Keep Dry

CAUTIONS FOR HANDLING AND OPERATION

Read these instructions carefully and use only as intended or instructed. Safety instructions are intended to avoid potential hazards that could result in personal injury or damage to the device.

	DEGREE OF RISK
WARNING	A hazard that could result in bodily injury or damage to the device if safety instructions are not followed.
CAUTION	A hazard that could result in light or moderate bodily injury or damage to the device if the safety instructions are not followed.
NOTICE	General information needed to operate the device safely.

WARNING

- To avoid electrical shock, do not plug or unplug the power cord with wet hands.
- To minimize risk of short circuit and electric shock; prevent water from contacting the control unit.
- Subjecting handpiece to a strong impact or drop onto a hard surface could result in electric shock.
- Touching the back end of the handpiece, where electrical connections are attached to the cord may result in electric shock.
- Use a power cord that has a grounding prong to prevent electric shock.
- Do not disassemble or alter the handpiece.
- Keep away from explosive substances and flammable materials.
- Do not use this product in the presence of inflammable anesthetics or gases.
- Confirm water is flowing adequately from the tip. Insufficient water flow to the tip could result in excess heat to the tip, leading to hard and soft tissue damage or overheating of the handpiece.
- Contraindication: ultrasonics may interfere with proper function of cardiac pacemakers. This device is not recommended for use on patients with cardiac pacemakers.
- Use recommended fuse: 120V:T1.25AL/125V, 230V:T400mAL/250V.
- This product needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information.
- Portable and mobile RF communications equipment can affect this product.
- The use of ACCESSORIES, transducer and cables other than those specified, with the exception of transducers and cables sold by the manufacturer of the product as replacement parts for internal components, may result in increased EMISSIONS or decreased IMMUNITY of it.
- This product should not be used adjacent to or stacked with other equipment and that if adjacent or stacked use is necessary, it should be observed to verify normal operation in the configuration in which it will be used.

CAUTION

- The handpiece is designed for clinical dental use only.
- Always consider the safety of the patient when operating the handpiece.
- Applied part is BF type.
- Check tip vibration outside the oral cavity before use. If any irregularities are found, discontinue use immediately and contact your dealer.
- Do not force or pull on the power cord and/or handpiece cord. It could cause disconnection.
- Do not exceed recommended power ranges for the tips. Excess power may damage tooth structure and/or result in damage to or excess wear of the tip.
- Check the tip before every use. Tips that have been bent, altered, worn or compromised in any way should be removed from service.
- Do not use tips on metal or ceramic restorations, unless tips are intended specifically for this purpose.
- Do not bend, alter or modify tips. Damage may occur to the tips affecting ultrasonic vibration.
- To eliminate risk of damage to the soft and hard tissues keep the tip moving at all times when in contact with the tooth, gingiva, mucosa and intra-oral tissues.
- Confirm the threaded area of the tip is clean of all debris.
- To ensure proper tip vibration attach the tip securely to the handpiece with the Guardian wrench and tip carrier. See figure 11.
- Attach the handpiece before turning on the power.
- Do not drop or otherwise expose the control unit to excess trauma.
- Use Hu-Friedy® Symmetry S-Series tips to ensure proper performance.
- Do not thermo-disinfect or autoclave any parts unless indicated so in the User Manual.
- Sterilization by ultraviolet light may cause discoloration of the handpiece.
- If water is spilled on the irrigating pump cover, wipe thoroughly and allow it to dry completely prior to use. If water gets inside the irrigating pump the rollers may slip and fail to pump irrigation solution.
- The system functions normally when the temperature is at 0°-40°C (32°-104° F), relative humidity at 10-85% RH, atmospheric pressure at 500-1060hPa and no moisture condensation occurs in the unit. Use outside of these conditions may cause malfunction.

NOTICE

- During vibration, the handpiece and the handpiece cord may affect computer and LAN cable. Noise may be heard during operation near a radio receiver.
- Turn off the power switch after use. Remove the power plug and the water inside the control unit if not used for an extended period of time.
- Applied parts for patient and/or operator are tip and handpiece.
- Users are responsible for operation control, maintenance and inspection.
- Store at -10°-60°C (14°-140°F), relative humidity at 10-85%RH, atmospheric pressure at 500-1060hPa. Do not subject system to dust, sulfur or salinity.
- Contact dealer or Hu-Friedy Mfg. Co., LLC if problems occur.

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC IMMUNITY

The Symmetry IQ 4000 Series is intended for use in the electromagnetic environment specified below. The customer or the user of the Symmetry IQ 4000 Series should assure that it is used in such an environment.

Immunity Test	IEC60601 test level	Compliance level	Electromagnetic environment-guidance
Electrostatic discharge (ESD) IEC61000-4-2	±6kV contact ±8kV air	±6kV contact ±8kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC61000-4-4	±2kV for power supply lines ±1kV for input/output	±2kV for power supply lines ±1kV for input/output	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC61000-4-5	±1kV line(s) to line(s) ±2kV line(s) to earth	±1kV line(s) to line(s) ±2kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC61000-4-11	<5% Ut (>95% dip in Ut) for 0.5 cycle <5% Ut (>95% dip in Ut) for 0.5 cycle 40% Ut (60% dip in Ut) for 5 cycles 40% Ut (60% dip in Ut) for 5 cycles 70% Ut (30% dip in Ut) for 25 cycles 70% Ut (30% dip in Ut) for 25 cycles <5% Ut (>95% dip in Ut) for 5 sec	<5% Ut (>95% dip in Ut) for 0.5 cycle <5% Ut (>95% dip in Ut) for 0.5 cycle 40% Ut (60% dip in Ut) for 5 cycles 40% Ut (60% dip in Ut) for 5 cycles 70% Ut (30% dip in Ut) for 25 cycles 70% Ut (30% dip in Ut) for 25 cycles <5% Ut (>95% dip in Ut) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Symmetry IQ 4000 Series requires continued operation during power mains interruptions, it is recommended that the Symmetry IQ 4000 Series be powered from an uninterruptible power supply or a battery.
Power frequency (50/60Hz) magnetic field IEC61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

NOTE: Ut is the a.c. mains voltage prior to application of the test level.

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Immunity Test	IEC60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC61000-4-6	3Vrms 150 kHz to 80MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the Symmetry IQ 4000 Series, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance: $d = 1.2\sqrt{P}$
Radiated RF IEC61000-4-3	3V/m 80MHz to 2.5 GHz	3 V/m	$d = 1.2\sqrt{P}$ 80MHz to 800MHz $d = 2.3\sqrt{P}$ 800MHz to 2.5GHz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m). Field strengths from fixed RF transmitters as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range. Interference may occur in the vicinity of equipment marked with the following symbol:

NOTE 1: At 80MHz and 800MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures and objects.

NOTE 3: Use of handpiece, cable and other components that are not manufactured or offered by the Manufacturer of the unit may affect Symmetry IQ 4000 EMC performance. Symmetry IQ 4000 should not be used adjacent to or stacked with other equipment. If this is necessary, confirm that Symmetry IQ 4000 Series and other equipment function as expected.

a. Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobiles radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the SYMMETRY IQ 4000 SERIES is used exceeds the applicable RF compliance level above, the SYMMETRY IQ 4000 SERIES should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the SYMMETRY IQ 4000 SERIES.
b. Over the frequency range 150kHz to 80MHz, field strengths should be less than 3 V/m.

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC IMMUNITY

The Symmetry IQ 4000 Series is intended for use in the electromagnetic environment specified below. The customer or the user of the Symmetry IQ 4000 Series should assure that it is used in such an environment.

Cables and accessories	Maximum length	Shield	Complies with	
Handpiece cord	2.0 m	Unshielded	RF emissions, CISPR11	Class B/ Group 1
Foot Controler	2.5 m	Unshielded	Harmonic emissions	IEC61000-3-2
			Voltage fluctuations/ flicker emission	IEC61000-3-3
			Electrostatic discharge (ESD)	IEC61000-4-2
			Electric fast transient / burst	IEC61000-4-4
			Surge	IEC61000-4-5
			Voltage dips, short interruptions and voltage variations on power supply input lines	IEC61000-4-11
			Power frequency(50/60Hz) magnetic field	IEC61000-4-8
			Conducted RF	IEC61000-4-6
			Radiated RF	IEC61000-4-3

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC IMMUNITY

The Symmetry IQ 4000 Series is intended for use in the electromagnetic environment specified below. The customer or the user of the Symmetry IQ 4000 Series should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment - Guidance
RF emissions CISPR11	Group 1	The Symmetry IQ 4000 Series uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR11	Class B	The Symmetry IQ 4000 Series is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC61000-3-3	Complies	

RECOMMENDED SEPARATION DISTANCES BETWEEN PORTABLE AND MOBILE RF COMMUNICATIONS EQUIPMENT AND THE SYMMETRY IQ 4000 SERIES

The Symmetry IQ 4000 Series is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the SYMMETRY IQ 4000 SERIES can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Symmetry IQ 4000 Series as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150kHz to 80MHz $d = 1.2\sqrt{P}$	80MHz to 800MHz $d = 1.2\sqrt{P}$	800MHz to 2.5GHz $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

INSTALLATION AND ASSEMBLY

1. UNPACKING THE DEVICE

Upon receipt please check device for any damage caused in transit. If necessary, contact your dealer.

2. GENERAL RECOMMENDATIONS

Connect the Symmetry IQ 4000 control unit to electric supply in accordance with current standards.

The water supply system should be of adequate quality for the practice of dental treatment. Additionally, the city water supply should be equipped with a cut-off system.

3. WATER SYSTEM SETUP

Use of City Water

Remove the cover from the water connector (Fig. 1)

Connect the filter side of the water tube by inserting deep into the water connector on the Symmetry IQ control unit. (Fig. 2)

Connect the provided water tube to the water outlet on the dental unit.

To remove the water tube from the control unit, push the white ring (the quick connector release ring) and gently remove the tube. (Fig. 3)

When the water tube is not connected, place the cover on the water tube connector on the control unit.

CAUTION: Be sure to insert the water tube deep into the connector on the control unit. If water has not been used recently at the water outlet of the dental unit, discolored water may come out. Wait until the water coming out of the dental unit is clean before connecting to the control unit.

Use of Irrigation Bottle

Remove the dust cover from the base unit. (Fig. 4)

Remove the cap of the irrigation bottle and fill solution to the desired level.

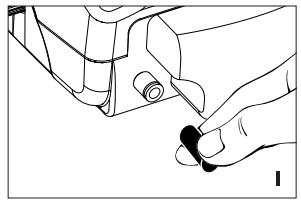
Close the cap of the irrigation bottle, check the air hole to confirm it is clean and insert the bottle into the connector located on the unit. (Fig. 5) When attached properly, the irrigation bottle will click into place.

To remove the irrigation bottle, pull the bottle straight up.

Gradation lines are printed on both sides of the irrigation bottle and can be read accurately from the fill position or when mounted on the control unit.

Mount the dust cover on the base unit when irrigation bottle is not in use.

NOTICE: Please make sure the connector and surrounding area is completely clean before installing the irrigation bottle. Wipe the irrigation bottle and connector area thoroughly prior to inserting the irrigation bottle.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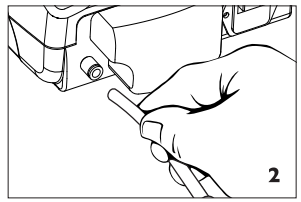
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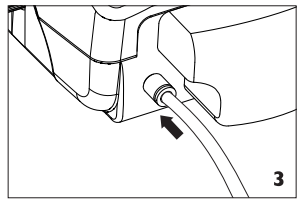
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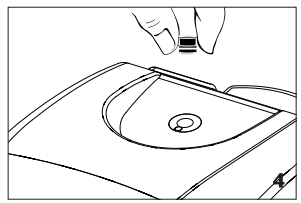
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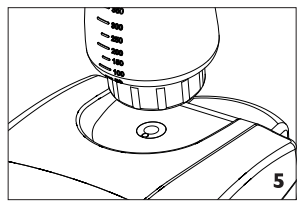
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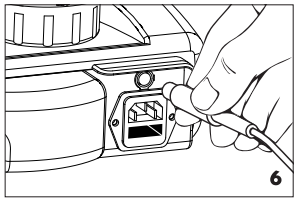
4. FOOT CONTROL CONNECTION

Connect the foot control plug to the foot control connector at the back of the control unit. (Fig. 6)

Align the marks on the foot control cord and on cowl located on the back of the unit. Take care to properly align all the pins. Push the plug gently into the connector.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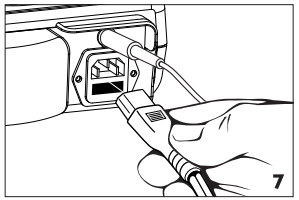
5. POWER CORD CONNECTION

Insert the power cord into the inlet at the back of the control unit. (Fig. 7) Plug the power cord into the power receptacle.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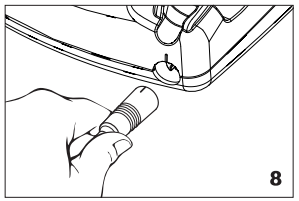
6. HANDPIECE CORD CONNECTION

Align the marks on the control unit and the handpiece cord plug. Gently push the plug into the connector at the front of the control unit. (Fig. 8)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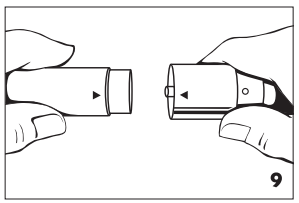
7. HANDPIECE CONNECTION

Confirm there is no moisture in the handpiece connector. If moisture is present, dry it with cloth or air syringe.

Align the marks on the handpiece with the marks on the handpiece hose to properly align the electrical contacts. (Fig. 9) Gently push straight to connect. Do not twist handpiece connector to connect.

Place the handpiece in the handpiece holder on the control unit.

To remove handpiece from the handpiece cord, first remove tip, then firmly grip the front section of the handpiece in one hand and the rear section of the handpiece cord plug with the other hand and pull to separate. Do not twist to separate.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WARNING: Do not touch the back end of the handpiece (where electrical connections are made to the cord). It may result in electric shock.

CAUTION:

1. Do not disconnect the cord handpiece when power to the device is switched on and the footswitch is depressed.
2. Detach tip before removing handpiece.
3. Push handpiece against handpiece cord plug to connect.
4. Grip the plug of the handpiece cord when removing handpiece.

8. START-UP

The following procedures are recommended before using your Symmetry IQ 4000 for the first time:

- Clean and sterilize all appropriate accessories.
- After installation of the device, operate the device at the lowest power setting while applying pressure to the foot control. This procedure will confirm adequate water flow and rinse the internal water circuits.
- Disconnect the handpiece and proceed with recommended cleaning and sterilization procedures. (See pages 13–14, Cleaning & Sterilization)

OPERATING PROCEDURES

1. WATER SYSTEM SETUP

Use of City Water

Carefully check all water supply connections prior to start-up. Open the dental unit's water valve. Set water pressure between 0.1-0.5MPa (15-73 psi).

Use of Irrigation Bottle

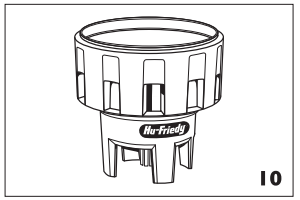
Confirm that the irrigation bottle is filled to the appropriate level.

If water or other liquids are spilled on the irrigation pump, please wipe it off thoroughly and allow to dry completely prior to use. If water gets inside the irrigation pump the roller may slip and fail to pump irrigation.

Do not put highly acidic liquids in the irrigation bottle. A list of approved liquids is available upon request or you can visit Hu-Friedy.com.

2. TIP CONNECTION

Your Hu-Friedy Symmetry S-Series piezo tip comes with its own tip carrier/torque limiting wrench (the Guardian™ wrench, Fig. 10).



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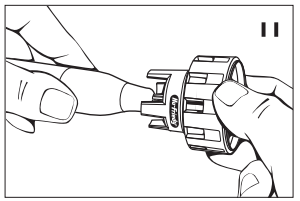
Attach tip to handpiece using the Guardian wrench by aligning the threaded end of the tip to the handpiece. (Fig. 11)

Rotate the Guardian wrench clockwise.

Complete installation of the tip by rotating the Guardian wrench until you hear clicking.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When using the Guardian wrench without a tip previously inserted into the tip carrier, take the following step: place the Guardian wrench over the tip by slipping tip through the small hole in the bottom, closed end of the tool. This will position the tip within the Guardian wrench for safety and convenience.

3. TIP REMOVAL

Hold the handpiece vertically. Insert the tip through the hole in the bottom of the Guardian wrench.

Depress wrench slightly while rotating to fully secure tip to wrench.

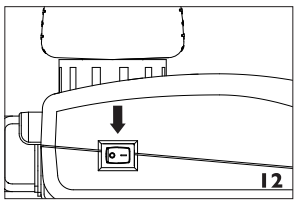
Turn the Guardian wrench counter-clockwise to loosen and remove tip from handpiece.

Once removed from handpiece, do not remove the tip from the Guardian carrier.

CAUTION: Proper vibration of a tip depends on correct attachment to the handpiece. Always use the torque-limiting Guardian wrench to ensure proper tip attachment and to eliminate over tightening or inadequate attachment of the tip. Over tightening of the tip may result in damage of the handpiece or tip.

4. POWER ON

Connect the power cord to the wall outlet. Turn on the power switch on the control unit. (Fig. 12) Front panel will light up.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CAUTION: Use of any wall outlets other than those of AC120V +/- 10% or AC230V +/- 10% may result in damage to the power cord.

5. OPERATION MODE SELECTION

Select the appropriate mode for procedure with the mode selection keys on the front panel. The light below the selected mode will illuminate.

ORANGE

BLUE

GREEN

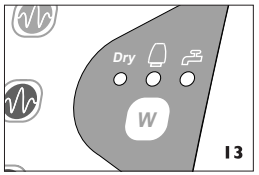
NOTICE: Color of the Guardian (torque limiting wrench/tip carrier) indicates the primary application mode on the Symmetry IQ 4000 unit. Please use as follows:

- Select ORANGE Mode for Symmetry tips with an ORANGE Guardian wrench
- Select BLUE Mode for Symmetry tips with a BLUE Guardian wrench
- Select GREEN Mode for Symmetry tips with a GREEN Guardian wrench.

Pre-select the appropriate power setting prior to patient treatment. See recommended power setting guide included with your Symmetry IQ Unit. Note that certain tips may be used in two power modes. Please adjust accordingly.

6. WATER MODE SELECTION

Push the water key on the control panel to select option for water flow. Three water modes are available on the front panel of the Symmetry IQ 4000. Dry mode, Irrigation Bottle, or City Water (Fig 13). The light on the control panel will illuminate when water option is selected.



13

WARNING: Always use water supply. Insufficient water supply will cause excessive heat which may result in damage to the tooth or other intra-oral tissues and possibly cause the tip to break. Dry mode should only be used when water would be detrimental to the dental procedure being performed, and should only be used for a few seconds at a time.

7. POWER RANGE SETTING

WARNING: Do not exceed recommended power range indicated on the Symmetry Power Range Guide. Higher than recommended power may damage tooth structure and/or tip.

Set the recommended power level with the power key on the front panel. The light in the power display panel will indicate the selected power level. Confirm that power level is set in the appropriate range for the selected Symmetry tip.

POWER

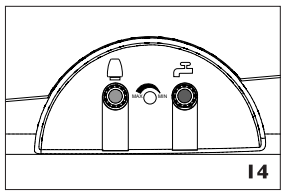
MODE	1	2	3	4	5	6	7	8	9	10
ORANGE										
BLUE										
GREEN										

NOTICE:

- Continuous pushing of the power level key will cause the power level to increase.
- When water only is desired without oscillation of the tip, push the power level key to extinguish the power level display. Water will flow, but the handpiece ring light will not illuminate.
- To ensure patient comfort and to extend the life of your tips always use the lowest effective power setting.

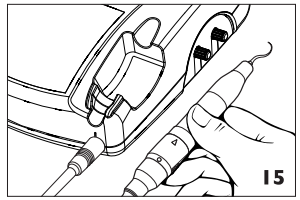
8. FOR OPERATION

- Verify that the water supply is adequate and clean prior to beginning each procedure.
- Adjust the power level to the recommended range.
- Depress the foot control to start tip vibration. The fiber-optic light will illuminate.


14

- Turn the water adjustment knob counterclockwise gradually to increase water flow. Use the blue colored knob to adjust water from ***city water*** connection and the green colored knob to adjust water flow from ***irrigation bottle***. (Fig. 14)

9. WHEN TREATMENT IS COMPLETED


15

- Release the foot control and replace the handpiece in the handpiece holder. (Fig. 15)
- Turn off the power switch.
- If using ***city water***, close the dental unit's water valve.
- If using ***irrigation bottle***, thoroughly wash the irrigation bottle water supply system. Please refer to page 14–15, Maintenance of the Control Unit: Auto Cleaning – Cleaning of Irrigation Tube.
- Remove the Symmetry tip with the Guardian Tip Carrier/Wrench.

CAUTION: When using alternative solutions, always clean the entire irrigation system thoroughly (See page 10, Auto Cleaning).

NOTICE: When the unit is shut down, the last mode settings in use are automatically retained in memory. When you power up the control unit for the next procedure the system will reactivate in the same configuration as when shut down.

SAFETY FUNCTION

When the operation mode is set to ORANGE Mode and the power setting is set to Max the unit will automatically reduce power if operated at these settings for more than 10 minutes. (The output display reduces 3 lights from "Max" to "8")

To reset the safety function:

- Before a lapse of 10 minutes or when the power weakens after a lapse of 10 minutes, release the foot control. The safety feature is now reset. To use at Max power again, adjust power level using the power key.
- Depressing the foot control repeats the same operation.

If the power switch to the control unit is turned on while the foot control is depressed accidentally, the control unit will beep to alert user.

PRESET MEMORY FUNCTION

The control unit can be preset for water mode, power setting and operating mode. To set the desired preset conditions into memory follow the procedure below:

- Set the desired levels. (operation mode, water mode and power setting)
- Push and hold the memory button M for at least 2 seconds. The memory light will illuminate and the control unit will beep. The settings are now in memory.
- To enter new settings: After confirming the water mode, power mode and operating mode, push and hold the Memory key for approximately 2 seconds. The Memory light will illuminate. The old memory is cleared and the new settings are programmed.
- To operate at the Memory settings, press the memory button M once.

CLEANING AND STERILIZATION

Clean and sterilize prior to first use and after each patient as noted below. Autoclave sterilization is required for handpiece and replacement tips prior to first use and after each patient. Do not sterilize by ultraviolet light. Cover the control unit with a barrier or wipe clean with a pH neutral surface disinfectant. The following cleaning and/or sterilization procedures are recommended for the control unit, foot control or handpiece cord.

CAUTION: Do not sterilize the control unit, power cord, foot control, water tube, irrigation connector, irrigation bottle, handpiece cord including the cover, lamp, o-ring, tip card or spanner wrenches.

PROCEDURES FOR THE SYMMETRY UNIT

1. Turn off the power switch.
2. Remove the tip from the handpiece using the Guardian Tip Carrier/Wrench. (See Fig. 11)
3. Remove the handpiece from the handpiece cord as described in Installation and Assembly: Handpiece Connection.
4. After each use please remove all the disinfectant solution and perform "Auto Cleaning" or "Manual Cleaning" procedure. See pages 14–15. Cleaning the irrigation tube after each use will eliminate chemical build up in the tubing and on metal parts. Metal parts may rust if chemicals are not removed at each use.
5. Wipe the control unit, foot control or handpiece cord with a clean cloth dampened with a surface disinfectant. Do not spray disinfectant solution directly on the control unit.
6. The use of an abrasive wipe or cleaning solution will damage the surface finish of the control unit.

PROCEDURES FOR THE SYMMETRY HANDPIECE

1. Clean the outer surface of the handpiece by wiping with a soft cloth dampened with pH neutral surface disinfection solution (not containing phenols). Do not spray the cleaning solution directly on the handpiece.
2. Wipe debris off the end of the optic fibers at the handpiece with an alcohol soaked cotton swab.
3. Place the handpiece in a cassette or sterilization pouch and seal.
4. Autoclave the handpiece for 15 minutes at 273˚F/134˚C.

PROCEDURES FOR SYMMETRY PIEZO TIPS

1. Clean, disinfect, inspect and steam sterilize before each use.
2. Tips remain in the Guardian wrench during the complete cleaning, disinfection and sterilization reprocessing cycle.
3. Clean piezo tips using ultrasonic cleaner or thermo disinfector.
4. Steam sterilize for at least 20 minutes at 250˚F/121˚C, or 5 minutes at 273˚F/134˚C.
5. Do not heat above 350˚F/177˚C.
6. Do not expose to phenols, iodophors or dry heat sterilization.*

* Detailed care and maintenance instructions are available upon request or go to Hu-Friedy.com.

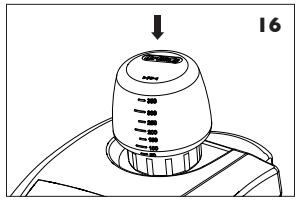
CAUTION: Do not place the handpiece on the bottom shelf of the sterilizer. To prevent exposure to excess heat, place handpiece and tips on the middle and top shelves of the sterilizer.

MAINTENANCE OF THE CONTROL UNIT

AUTO CLEANING – CLEANING OF IRRIGATION TUBE
(Use of Irrigation Bottle)

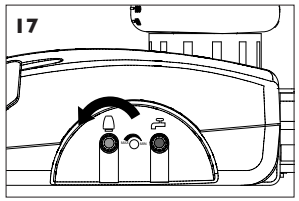
CAUTION: After each use please remove all the alternative solution and perform "Auto Cleaning" procedure. Cleaning the irrigation tube after each use will eliminate chemical build up in the tubing and on metal parts. Metal parts may rust if chemicals are not removed at each use.

1. Pull straight up on the irrigation bottle to remove the bottle from the control unit.
2. Fill a spare bottle with at least 175ml with clear distilled water.
3. Place the cap on the bottle, check the irrigating bottle connector opening and surrounding area of the control unit and clean as necessary. After cleaning, install the irrigation bottle by pressing down until it clicks into place. (Fig. 16)

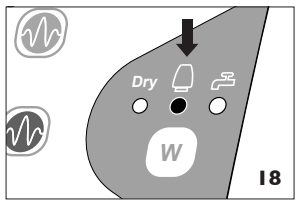


CAUTION: Use only distilled water for cleaning and confirm the connector hole and surrounding area is clean and free of debris.

4. Turn the irrigation bottle adjustment knob (green) to maximum water flow. (Fig. 17)



5. Select the Irrigation Bottle water selection mode on the display panel. The Irrigation Bottle lamp will illuminate. (Fig. 18)
6. Press and hold the water selection mode key for 2 seconds. The unit will beep, all the lamps except the irrigation bottle lamp will shut off and the auto cleaning sequence will begin. The auto cleaning sequence takes approximately 30 seconds.
7. After the auto cleaning commences sequence pushing the water selection mode key will stop the sequence.



CAUTION: If you press the mode selection key or the power key during the auto cleaning sequence, the tip will vibrate. Please confirm the power setting does not exceed the maximum recommended power for the tip.

NOTICE: Setting the irrigation bottle water adjustment knob at less than maximum during auto cleaning will result in incomplete cleaning in the 30-second cycle.

8. When the auto-cleaning sequence completes, the unit will revert to the settings prior to cleaning.
9. Remove the irrigation bottle by pulling straight up.
10. After use please thoroughly clean and dry all bottles prior to next use.

MANUAL CLEANING METHOD – CLEANING OF IRRIGATION TUBE ***(Use of Irrigation Bottle)***

1. Pull straight up on the irrigation bottle to remove it from the control unit.
2. Open the cap of the irrigation bottle, remove any remaining solution and fill the bottle with distilled water.
3. Close the cap firmly and replace the bottle on the control unit. (Make sure the air hole is clean and free from debris). Insert the bottle into the irrigation connector opening; push down until it clicks.
4. Operate the unit for approximately 30 seconds with irrigation bottle water flow at maximum setting.

WATER LINE MAINTENANCE

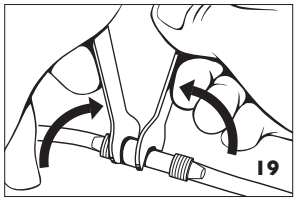
Local, regional and federal authorities establish safe potable water quality level guidelines for human use. In Europe the maximum accepted level of colony forming units of bacteria (cfu's) for potable water used in DUWLs is no more than 100 cfu/ml at a temperature of 22°C (20 cfu/ml at a temperature of 36°C). In the U.S., the Centers for Disease Control established a 500 cfu/ml level, while the American Dental Association sets a maximum level of 200 cfu/ml. Follow regulatory recommendations in your region regarding flushing dental unit water lines.

CHANGING WATER FILTER

Close the water valve of the dental unit to which the Symmetry IQ 4000 control unit is connected. Mount two (5X8) spanner wrenches as shown in Fig. 19 and turn in the directions shown. This motion may cause the water tube to become twisted. If this occurs, relieve the twist by turning the tube at the end on the control unit so the side is free to turn.

When the water filter case is separated, the water filter can be removed as shown in Fig. 20. Replace filter and reassemble the filter in the reverse order. Optional Water Filter: Order No. UPWF.

CAUTION: Be sure to replace the water filter in the proper direction. The side of the filter with the o-ring should be pointed towards the control unit side. If assembled in the wrong direction the effect of the water filter will be lost.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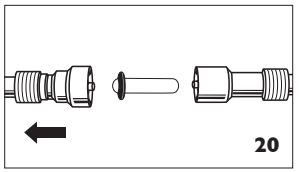
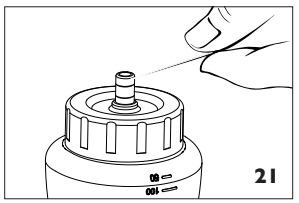

20

CHANGING THE O-RING ON THE IRRIGATION BOTTLE

Remove two O-rings at the bottle joint with a pointed instrument, and place new ones into the grooves. (Fig. 21) Optional O-ring : Order No. UP4ORINGS


21

CHANGING THE IRRIGATION PUMP ***(Use of Irrigation Bottle)***

Remove the irrigation bottle by pulling straight up.

Remove the irrigation pump cover by gently pulling up on the cover. (Fig. 22)

Push the coupling in to release the tube connector and disconnect the irrigation tube. (Fig. 23)

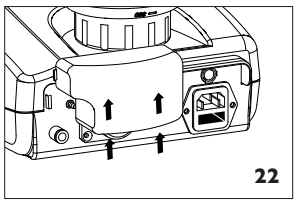
Remove the irrigation tube from connector. (Fig. 24)

Turn the irrigation pump counterclockwise until it clicks. Pull out pump. Align the replacement irrigation pump with the drive shaft at the same position and turn clockwise until it clicks. (Fig. 25)

Connect the irrigation tube to the connector.

Insert the tube connector to the coupling until it clicks.
Optional Irrigation Pump : Order No. UP4PUMP

When reinstalling the pump cover be sure to tuck in irrigation tubing to prevent pinching of the water tubing.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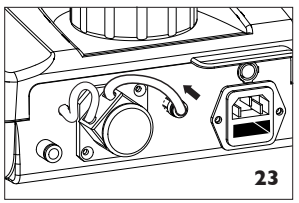
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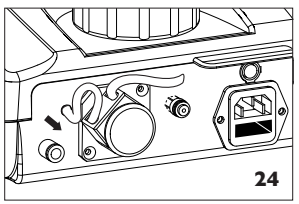
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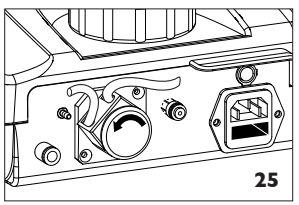

25

CAUTION: Before replacing the irrigation pump, wipe off excess water on pump and drive shaft. The wet drive shaft and rollers can be slippery and cause improper operation.

- To prevent damage to the pump rollers, use a gentle pushing motion to insert the replacement irrigation pump onto the drive shaft. Do not twist.
- Run the replaced irrigation pump about 10 seconds on highest water volume setting before operation to adopt irrigation tube to new pump.

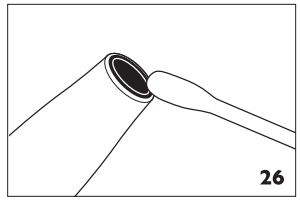
CLEANING FIBER-OPTIC LIGHT

Wipe debris off the end of the optic fibers at the handpiece with an alcohol soaked cotton swab. (Fig. 26)

CAUTION: Do not use any sharp pointed tools to clean the optic fiber end face. In case the light becomes dim, contact your dealer.

CHANGING FIBER-OPTIC LIGHT

Disassemble the handpiece from the handpiece cord.
(See Installation & Assembly)

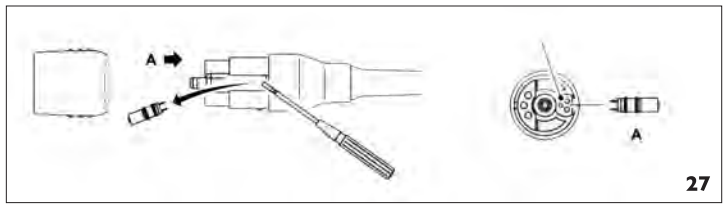

26

Remove the handpiece sleeve. Use a small screw driver to push the lamp out. (Fig. 27)

Align the lamp pins of the new lamp with the holes and push the lamp into place.

Align the mark on the handpiece sleeve with the same mark on the handpiece cord. Push the sleeve to the cord until it clicks. (Fig. 28)

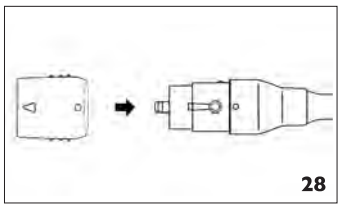
CAUTION: Do not touch glass part of new lamp and exercise care when mounting a new lamp to avoid dislodging the o-ring from the groove.



27

WARNING: Do not use the device if it appears to be defective.

NOTE: If a failure occurs, contact the supplier of your Symmetry IQ product. Repair by unauthorized person may void warranty.

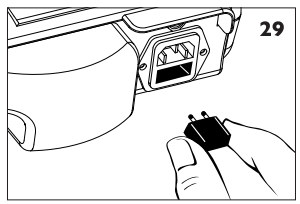

28

REPLACING THE FUSE

Depress the spring tabs located on the top and bottom of the power connector assembly and remove it to change the fuses. (Fig. 29)

Replacement Fuse: T1.25AL/125V (120V) Order No. UP4FUSE120, T400mAL/250V (230V) Order No. UPFUSE230

WARNING: Use a fuse with the following specified rating. (120V :T1.25AL/125V, 230V :T400mAL/250V)


29

SERVICE

Please send your Symmetry IQ 4000 to your dealer or an authorized Hu-Friedy repair center. Shipping your product in its original packaging will offer the best protection against damage during shipping. If sending directly to an authorized Hu-Friedy repair center, please include the name and address of your dealer. All items must be cleaned, disinfected and sterilized as described in the operating instructions before shipment.

DISPOSAL AND RECYCLING

Dispose of this device and its accessories via methods approved for electronic devices and in compliance with the Directive 2002/96/CE. At the end of their life, tips should be discarded in safety containers designed for this purpose.

EU REGULATORY INFORMATION

When drawing water directly from a dental chair or other water supply system within a dental practice for the Symmetry IQ 4000, a system or device must be installed to ensure that no contaminated water can flow or be sucked back into the drinking water supply. When installing such a system please observe that the requirements of the EN1717 Regulations are adhered to.

HELPFUL INFORMATION

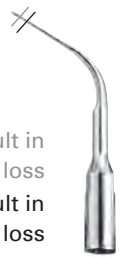
The use of higher than recommended power setting may cause excessive wear or tip breakage.

Always remember to properly tighten the tip to handpiece using the Guardian wrench.

Scaling efficiency can diminish significantly with worn tips. Inferior performance and poor water delivery can result from worn, damaged, bent or altered tips. For optimal scaling efficiency, we recommend checking tips regularly for signs of wear.

CHECKING SYMMETRY TIPS FOR WEAR:

1. Locate the diagram of the tip to be measured on the Symmetry Wear Guide (HF-469).
2. Rotate the tip until it is flat against the card.
3. **Evaluate tip condition, comparing length to red/blue lines**.



1mm loss can result in 25% efficiency loss

2mm loss can result in 50% efficiency loss

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Control lamp does not illuminate when the unit is switched on.	The power cord or the jack is disconnected	Check all the connections of the control unit.
		Check the power supply to the dental office.
	The internal fuse has burned out.	Contact your dealer or Hu-Friedy.
No/poor ultrasonic vibration and handpiece is leaking.	The tip is not tightened firmly.	Tighten the tip with the Guardian wrench until you hear a click.
	The tip is worn.	Replace the tip.
	Power has not been properly adjusted for the tip.	Adjust the power setting to the recommended power range indicated on the Guardian wrench package insert.
	The foot control is disconnected.	Connect the foot control correctly.
	Handpiece failure.	Contact your dealer or Hu-Friedy.
	Using E-Series Tips.	Check tip part code.
	Foot control failure.	Contact your dealer or Hu-Friedy.
The tip is bent or broken.	Excess power to the tip.	Operate the tip only in the recommended power range indicated on the Guardian wrench or Power Range guide.
	Tip was dropped or mishandled during cleaning and sterilization.	Always process the tip in the Guardian wrench.
		Discard bent or broken tips.
The tip unthreads itself.	The tip is not tightened properly.	Tighten the tip with the Guardian wrench until you hear a click.
Noise from the handpiece.	Output has not been properly adjusted for the tip.	Adjust the power setting to the recommended power range indicated on the Guardian wrench or package insert.
	The tip is not tightened firmly.	Tighten the tip with the Guardian wrench until you hear a click.
	Vibration failure in the handpiece or the control unit.	Contact your dealer or Hu-Friedy.
Handpiece is overheating	Output has not been properly adjusted for the tip.	Adjust the power setting to the recommended power range indicated on the Guardian wrench or package insert.
	The tip is not tightened properly.	Tighten the tip with the Guardian wrench until you hear a click.
	Vibration failure in the handpiece or the control unit.	Contact your dealer or Hu-Friedy.
No/poor water flow ***(Use of City Water)***	No water is flowing to the control unit.	Check the water line and supply to the control unit. Water pressure should be set to: 0.1-0.5MPa (15–73 psi)
No irrigation supply and/or unstable irrigation supply ***(Use of Irrigation Bottle)***	The irrigation pump is running. The irrigation tube is kinked	Straighten the kinked irrigation tube.
	The irrigation pump is not running. Time to replace Irrigation Pump (Approximately 500 hours after first use)	Replace new Irrigation Pump (See page 16, Changing the Irrigation Pump)

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Water is leaking at the junction of the handpiece and the cord.	The handpiece is not connected properly.	Firmly insert the handpiece into the handpiece cord.
	O-ring at the back of the handpiece is worn or damaged.	Replace o-ring.
Water is leaking at the junction of the Irrigation Tube and the irrigation tube connector.	The Irrigation Tube is not connected properly.	Firmly insert the Irrigation Tube deep into the irrigation connector.
Water is leaking at the junction of the Irrigation Bottle and the irrigating connector opening.	The Irrigation Bottle is not connected properly.	Remove the Irrigation Bottle. Check the air hole to confirm it is clean and insert the bottle into the connector until you hear a click.
	O-ring is damaged	Replace O-ring
Water appears to be leaking underneath the unit.	The handpiece cord is not inserted tightly into the control unit.	Check handpiece cord and water tube to ensure they are inserted tightly in the unit.
	The water tube is not inserted fully into the control unit.	
No liquid flowing to the handpiece when the footswitch is activated.	Water flow is set too low.	Adjust the liquid flow water knob.
	Connections are not secure.	Check the connections between the handpiece and the handpiece hose.
		Check the connection to the unit.
		Check the connection to the foot control.
	Unit in Dry Mode	Change water selection.
	Irrigation Bottle is not properly engaged	Adjust bottle to be properly seated.
	Water filter is blocked.	Check the water filter for blockage.
Fiber-optic light does not illuminate.	The handpiece is not properly connected to the handpiece cord.	Firmly insert the handpiece into the handpiece cord.
	The lamp pins are not correctly engaged in the socket.	Mount the lamp correctly and securely.
	The lamp is burned out.	Replace the lamp.
	Failure of the control unit.	Contact your dealer or Hu-Friedy.
Loss of power output without operation.	Safety function is activated.	Power output will weaken automatically after 10 minutes of continuous operation at maximum power in ORANGE mode. Removing the foot from the foot control will reset the safety function. Stepping on the foot control will resume the previous function.
Beeping while power is on.	Depressed foot control	Turn the power switch on after release of the foot control.
Beeping while stopping vibration of the tip.	Abnormal heating of the control unit.	Stop operation until control unit is cool.

SYMMETRY IQ 4000 REGISTRATION FORM

PLEASE COMPLETE AND MAIL THIS FORM IN ORDER TO REGISTER YOUR SYMMETRY IQ 4000

Purchaser's Name: _____

Serial Number: (Located on plate) _____ Date of Purchase: _____

Telephone: _____ Fax: _____ Email: _____

Address: _____

City: _____ State/Province: _____ Zip/Postal Code: _____

Country: _____

Number of Practitioners In Practice: Dentists _____ Hygienists _____ Assistants _____

Dental Specialty: _____

Dealer Name: _____

U.S. and Canada:
Symmetry IQ 4000 Registration
Hu-Friedy Mfg. Co., LLC
3232 N. Rockwell St.
Chicago, IL 60618
USA

Europe:
Symmetry IQ 4000 Registration
Hu-Friedy Mfg. Co., LLC
Zweigniederlassung Deutschland
Ziegeleiweg 1
D-78532 Tuttlingen-Möhringen

Hu-Friedy

GUARANTEE

Hu-Friedy, at its sole option, will repair or replace for a period of one year following the date of the first purchase as a new item, any Symmetry IQ piezo generator unit ("Unit") that fails as a result of a defect in materials or workmanship. Purchaser must return the defective Unit (postage prepaid) and must provide Hu-Friedy with the guarantee registration card.

Excluded from this guarantee are damages in cases of:

- the Unit having been used outside of normal operating conditions;
- the Unit being damaged in transit;
- Non-compliance with the manufacturer's installation instructions (water pressure, mains voltage);
- use with an electrical system that does not comply with regulations in force;
- uses other than those specified in this manual;
- non-compliance with instructions contained in this manual;
- service to the Unit being provided by non-authorized persons;
- components exhibiting normal wear from usage;
- damages/defects being caused by force majeure or any other condition that is beyond the control of Hu-Friedy.

Repair service or replacement provided under the guarantee neither extend the guarantee period nor begin new guarantee period. Damages from breach of the guarantee described herein are limited to the cost of repair or replacement of the Unit at Hu-Friedy's sole option. Consequential or incidental damages resulting from breach of the guarantee described herein are hereby excluded. Any statutory warranty rights shall remain unaffected by the guarantee provided herein.

Please contact Hu-Friedy for instructions on obtaining warranty service.

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UPMANUAL4/0112
OM-EZ378E001 '11.10.03 Ⓢ